ACADEMIC CURRICULA

UNDERGRADUATE/ INTEGRATED POST GRADUATE DEGREE PROGRAMMES

(With exit option of Diploma)

(Choice Based Flexible Credit System)

Regulations 2021

Volume – 1

(Revised on July 2024)

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

(Deemed to be University u/s 3 of UGC Act, 1956)

Kattankulathur, Chengalpattu District 603203,

Tamil Nadu, India

19. B.Tech. in Computer Science and Engineering with Specialization in Artificial Intelligence and Machine Learning

19. (a) Mission of the Department

Mission Stmt – 1	*To impart knowledge in cutting edge Computer Science and Engineering technologies in par with industrial standards.*
Mission Stmt – 2	*To collaborate with renowned academic institutions to uplift innovative research and development in Computer Science and Engineering and its allied fields to serve the needs of society*
Mission Stmt – 3	*To demonstrate strong communication skills and possess the ability to design computing systems individually as well as part of a multidisciplinary teams.*
Mission Stmt – 4	*To instill societal, safety, cultural, environmental, and ethical responsibilities in all professional activities*
Mission Stmt – 5	*To mould the students to be technically competent through innovation and to inculcate the leader skills, professional ethics, environment protection and societal concerns with life-long learning.*

19. (b) Program Educational Objectives (PEO)

PEO – 1	*Graduates will be able to perform in technical/managerial roles ranging from design, development, problem solving to production support in software industries and R&D sectors.*
PEO – 2	*Graduates will be able to successfully pursue higher education in reputed institutions.*
PEO – 3	*Graduates will have the ability to adapt, contribute and innovate new technologies and systems in the key domains of Computer Science and Engineering.*
PEO – 4	*Graduates will be ethically and socially responsible solution providers and entrepreneurs in Computer Science and other engineering disciplines.*
PEO – 5	*Graduates will have the ability to explore research areas and produce outstanding contribution in various areas of Systems Engineering*

19. (c) Mission of the Department to Program Educational Objectives (PEO) Mapping

	Mission Stmt. - 1	Mission Stmt. - 2	Mission Stmt. - 3	Mission Stmt. - 4	Mission Stmt. - 5
PEO - 1	3	-	-	-	1
PEO - 2	-	-	2	-	-
PEO - 3	-	3	3	-	-
PEO - 4	-	-	-	2	3
PEO - 5	-	-	3	3	3

3 – High Correlation, 2 – Medium Correlation, 1 – Low Correlation

19. (d) Mapping Program Educational Objectives (PEO) to Program Outcomes (PO)

	Program Outcomes (PO)												Program Specific Outcomes (PSO)		
	1	2	3	4	5	6	7	8	9	10	11	12	PSO-1	PSO-2	PSO-3
	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO-1	PSO-2	PSO-3
PEO - 1	3	-	-	1	-	2	-	3	2	3	-	-	3	-	-
PEO - 2	-	2	2	-	3	-	3	2	-	-	-	-	-	-	3
PEO - 3	-	3	3	2	-	-	-	-	-	2	-	3	-	3	-
PEO - 4	-	2	3	-	-	3	2	-	2	-	2	2	-	-	3
PEO - 5	-	3	3	-	3	-	-	-	3	-	3	3	-	2	3

3 – High Correlation, 2 – Medium Correlation, 1 – Low Correlation

PSO – Program Specific Outcomes (PSO)

PSO - 1	*To understand, analyze, design, and develop computing solutions by applying fundamental concepts of computer science and engineering.*
PSO - 2	*To apply computing principles, skills and practices to develop solutions using logical and reasoning skills, for real life problems.*
PSO - 3	*Ability to utilize Artificial Intelligence and Machine learning principles to design and develop cutting edge solutions for meeting the current demand of the industry.*

19. (e) Program Structure: B.Tech. in Computer Science and Engineering with Specialization in Artificial Intelligence and Machine Learning

Humanities & Social Sciences including Management Courses (H)

Course Code	Course Title	L	T	P	C
21LEH101T	Communicative English	2	1	0	3
21LEH102T	Chinese				
21LEH103T	French				
21LEH104T	German				
21LEH105T	Japanese	2	1	0	3
21LEH106T	Korean				
21LEH107T	Spanish				
21LEH108T	Russian				
21GNH101J	Philosophy of Engineering	1	0	2	2
21PDH209T [1]	Social Engineering	2	0	0	2
21GNH401T	Behavioral Psychology	2	1	0	3
			Total Credits		13

Basic Science Courses (B)

Course Code	Course Title	L	T	P	C
21PYB102J	Semiconductor Physics and Computational Methods	3	1	2	5
21CYB101J	Chemistry	3	1	2	5
21MAB101T	Calculus and Linear Algebra	3	1	0	4
21MAB102T	Advanced Calculus and Complex Analysis	3	1	0	4
21MAB201T	Transforms and Boundary Value Problems	3	1	0	4
21MAB204T	Probability and Queueing Theory	3	1	0	4
21MAB302T	Discrete Mathematics	3	1	0	4
21BTB102T	Introduction to Computational Biology	2	0	0	2
			Total Credits		32

Engineering Science Courses (S)

Course Code	Course Title	L	T	P	C
21MES101L [1]	Basic Civil and Mechanical Workshop	0	0	4	2
21MES102L [1]	Engineering Graphics and Design	0	0	4	2
21EES101T	Electrical and Electronics Engineering	3	1	0	4
21CSS101J	Programming for Problem Solving	3	0	2	4
21CSS201T	Computer Organization and Architecture	3	1	0	4
21DCS201P [1]	Design Thinking and Methodology	1	2	0	3
21CSS303T	Data Science	2	0	0	2
			Total Credits		21

Professional Core Courses (C)

Course Code	Course Title	L	T	P	C
21CSC101T	Object Oriented Design and Programming	2	1	0	3
21CSC201J	Data Structures and Algorithms	3	0	2	4
21CSC202J	Operating Systems	3	0	2	4
21CSC203P [1]	Advanced Programming Practice	3	1	0	4
21CSC204J	Design and Analysis of Algorithms	3	0	2	4
21CSC205P [1]	Database Management Systems	3	1	0	4
21CSC206T	Artificial Intelligence	2	1	0	3
21CSC301T	Formal Language and Automata	3	0	0	3
21CSC302J	Computer Networks	3	0	2	4
21CSC303J	Software Engineering and Project Management	2	0	2	3
21CSC304J	Compiler Design	2	0	2	3
21CSC305P [1]	Machine Learning	2	1	0	3
21CSC401J	Deep Learning Techniques	3	0	2	4
21CSC402P [1]	Report Writing	2	0	0	2
			Total Credits		48

Non Credit Courses (M)

Course Code	Course Title	L	T	P	C
21PDM101L [1]	Professional Skills and Practices	0	0	2	
21PDM102L [1]	General Aptitude	0	0	2	
21PDM201L [1]	Verbal Reasoning	0	0	2	
21PDM202L [1]	Critical and Creative Thinking Skills	0	0	2	0
21PDM301L [1]	Analytical and Logical Thinking Skills	0	0	2	
21PDM302L [1]	Employability Skills and Practices	0	0	2	
21CYM101T [1]	Environmental Science	1	0	0	0
21LEM101T [1]	Constitution of India	1	0	0	0
21LEM102T [1]	Universal Human Values – Introduction	1	0	0	0
21LEM201T [1]	Professional Ethics	1	0	0	0
21LEM202T [1]	Universal Human Values-II: Understanding Harmony and Ethical Human Conduct	2	1	0	3
21LEM301T [1]	Indian Art Form	1	0	0	0
21LEM302T [1]	Indian Traditional Knowledge	1	0	0	0
21GNM101L [1]	Physical and Mental Health using Yoga				
21GNM102L [1]	National Service Scheme	0	0	2	0
21GNM103L [1]	National Cadet Corps				
21GNM104L [1]	National Sports Organization				
			Total Credits		03

Open Elective Courses (O)
(Any 3 courses)

Course Code	Course Title	L	T	P	C
21CSO351T	Web Programming	2	1	0	3
21CSO352T	Python Programming	2	1	0	3
21CSO353T	Mobile Application Development	2	1	0	3
21CSO354T	Data Analytics	2	1	0	3
			Total Credits		09

Project Work, Seminar, Internship in Industry / Higher Technical Institutions (P)

Course Code	Course Title	L	T	P	C
21GNP301L [1]	Community Connect	0	0	2	1
21CSP302L [1]	Project	0	0	6	3
21CSP303T [1]	MOOC	3	0	0	
21CSP401L	Major Project	0	0	30	15
21CSP402L	Major Project	0	0	20	10
21CSP403L	Internship#	0	0	10	5
			Total Credits		19

Professional Elective Courses (E) *(Any 6 Courses)*						Professional Elective Courses (E)					
Course Code	Course Title	Hours / Week			C	Course Code	Course Title	Hours / Week			C
		L	T	P				L	T	P	
21CSE271T	Programming in Java	2	1	0	3	21CSE396T	Design Principles of Smart Space Management	3	0	0	3
21CSE251T	Digital Image Processing	3	0	0	3	21CSE421T	Business Intelligence and Analytics	2	1	0	3
21CSE272T	Genetic algorithm and its applications	3	0	0	3	21CSE451T	Pattern Recognition Techniques	2	1	0	3
21CSE311P [1]	Robot Programming	2	1	0	3	21CSE454T	Computer Vision	2	1	0	3
21CSE312P [1]	Software Engineering in Artificial Intelligence	2	1	0	3	21CSE411T	Artificial Intelligence in Genomics and Disease Prediction	3	0	0	3
21CSE313P [1]	Accelerated Data science	2	1	0	3	21CSE412T	Machine learning in Drug Discovery	3	0	0	3
21CSE326T	Artificial Neural Networks	3	0	0	3	21CSE414T	IoT concepts and applications	3	0	0	3
21CSE355T	Data Mining and Analytics	2	1	0	3	21CSE415T	Fuzzy Logic and its applications	3	0	0	3
21CSE356T	Natural Language Processing	2	1	0	3	21CSE416T	Robotics: Computational Motion Planning	3	0	0	3
21CSE371T	Advanced Algorithms	3	0	0	3	21CSE417T	Reinforcement Learning Techniques	2	1	0	3
21CSE323T	Marketing Analytics	2	1	0	3	21CSE418T	Cyber Physical systems	3	0	0	3
21CSE375T	Computational Neuroscience	3	0	0	3		Total Credits				18
21CSE376T	Nature Inspired Computing Techniques	3	0	0	3						
21CSE377T	Information Retrieval	3	0	0	3						

19. (f) Programme Articulation: B.Tech. in Computer Science and Engineering with Specialization in Artificial Intelligence and Machine Learning

Course Code	Course Name	Program Outcomes (PO)												PSO		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO-1	PSO-2	PSO-3
21CSS101J	Programming for Problem Solving	2	3	-	-	-	-	-	-	-	-	-	2	-	3	-
21CSS303T	Data Science	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-
21CSS201T	Computer Organization and Architecture	3	2	-	-	-	-	-	-	-	-	-	-	1	2	1
21CSC201J	Data Structures and Algorithms	2	3	3	1	-	-	-	-	-	-	-	-	1	1	2
21CSC101T	Object Oriented Design and Programming	-	2	2	-	2	-	-	-	-	-	-	3	-	2	2
21CSC204J	Design and Analysis of Algorithms	2	1	2	1	-	-	-	-	-	3	-	3	3	1	-
21CSC202J	Operating Systems	3	3	3	2	-	-	-	-	-	-	-	3	2	-	-
21CSC303J	Software Engineering and Project Management	-	3	2	-	-	-	-	-	2	-	2	-	3	-	-
21CSC203P	Advanced Programming Practice	3	2	2	1	2	-	-	-	1	-	-	-	2	-	-
21CSC301T	Formal Language and Automata	2	2	2	-	-	-	-	-	-	-	-	-	-	3	-
21CSC302J	Computer Networks	3	-	-	2	3	-	-	-	-	-	-	-	1	-	-
21CSC205P	Database Management Systems	3	2	2	-	-	-	-	-	-	-	-	-	2	1	-
21CSC304J	Compiler Design	3	3	2	3	2	-	-	-	-	-	-	-	-	1	-
21CSC206T	Artificial Intelligence	1	2	3	-	-	-	-	-	-	-	-	-	1	2	-
21CSC305P	Machine Learning	-	3	-	3	-	-	-	-	-	-	-	-	-	1	3
]21CSE251T	Digital Image Processing	3	2	2	3	-	-	-	-	-	-	-	-	2	3	-
21CSE271T	Programming in Java	3	2	1	2	-	-	-	-	-	-	-	1	3	2	-
21CSE272T	Genetic Algorithm and its applications	1	2	3	-	-	-	-	-	-	-	-	-	3	1	-
21CSE291T	Introduction to Cognitive Neuroscience	1	3	2	2	-	-	-	-	-	-	-	1	3	2	-
21CSE311P	Robot Programming	2	2	-	3	-	-	-	-	-	-	-	-	2	-	3
21CSE312P	Software Engineering in Artificial Intelligence	-	3	3	-	3	-	-	-	-	-	-	-	2	2	3
21CSE313P	Accelerated Data Science	1	2	-	3	-	-	-	-	-	-	-	-	1	-	2
21CSE323T	Marketing Analytics	-	-	-	-	-	-	-	3	-	3	-	-	2	2	1
21CSE326T	Artificial Neural Networks	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2
21CSE355T	Data Mining and Analytics	1	2	-	-	3	-	-	-	-	-	-	-	2	-	-
21CSE356T	Natural Language Processing	3	3	2	3	3	-	-	-	-	-	-	-	2	-	-
21CSE371T	Advanced Algorithms	-	2	-	2	-	-	-	-	-	-	-	-	1	-	2
21CSE375T	Computational Neuroscience	3	1	-	-	-	-	-	-	-	-	-	-	-	2	3
21CSE376T	Nature Inspired Computing Techniques	3	3	-	-	-	-	-	-	-	-	-	-	-	-	3
21CSE377T	Information retrieval	2	3	3	-	-	-	-	-	-	-	-	-	-	-	2
21CSE396T	Design Principles of Smart Space Management	3	2	2	-	-	-	-	-	-	-	-	-	1	2	3
21CSE397T	Philosophy of Cognitive science	-	3	-	3	-	-	-	-	-	-	-	-	1		3
21CSE398T	Logic and Knowledge representation	-	2	-	3	-	-	-	-	-	-	-	-	2		3
21CSE417T	Reinforcement Learning Techniques	3	3	-	3	-	-	-	-	-	-	-	-			3
21CSE418T	Cyber Physical Systems	3	3	2	-	-	-	-	-	-	-	-	-	2		3
21CSE421T	Business Intelligence and Analytics								3		3			2	2	2
21CSE451T	Pattern Recognition Techniques	3	2	2	-	2	-	-	-	-	-	-	-	1	2	2
21CSE454T	Computer Vision	2	2	1	1	1	-	-	-	-	-	-	-	3	-	2
21CSE411T	Artificial Intelligence in genomics and disease prediction	3	3	2	-	-	-	-	-	-	-	-	-	3	-	3
21CSE412T	Machine learning in Drug Discovery	3	2	3	-	-	-	-	-	-	-	-	-	-	-	3
21CSE414T	IoT Concepts and applications	2	3	3	-	-	-	-	-	-	-	-	1	1	-	3
21CSE415T	Fuzzy Logic and its applications	3	2	3	-	-	-	-	-	-	-	-	-	1	2	3
21CSE416T	Robotics: Computational Motion Planning	3	3	2	-	-	-	-	-	-	-	-	-	1	2	3
21CSC401J	Deep Learning Techniques	-	3	-	2	-	-	-	-	3	-	-	2	-	-	3
21CSC402P	Report Writing	-	2	-	3	-	-	-	3	-	-	-	-	-	-	2
21CSP302L	Project	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
21CSP303T	MOOC	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
21CSP401L	Major Project	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
21CSP402L	Major Project	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
21CSP403L	Internship	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Program Average															

19. (g) Implementation Plan: B.Tech. in Computer Science and Engineering with Specialization in Artificial Intelligence and Machine Learning

Semester – I

Course Code	Course Title	L	T	P	C
21LEH101T	Communicative English	2	1	0	3
21MAB101T	Calculus and Linear Algebra	3	1	0	4
21PYB102J	Semiconductor Physics and Computational Methods	3	1	2	5
1MES102L [1]	Engineering Graphics and Design	0	0	4	2
21EES101T	Electrical and Electronics Engineering	3	1	0	4
21CSS101J	Programming for Problem Solving	3	0	2	4
21CYM101T [1]	Environmental Science*	1	0	0	0
21PDM101L [1]	Professional Skills and Practices	0	0	2	0
21LEM101T [1]	Constitution of India	1	0	0	0
	Total Credits				**22**

Semester – II

Course Code	Course Title	L	T	P	C
21LEH102T	Chinese				
21LEH103T	French				
21LEH104T	German				
21LEH105T	Japanese	2	1	0	3
21LEH106T	Korean				
21LEH107T	Spanish				
21LEH108T	Russian				
21GNH101J	Philosophy of Engineering	1	0	2	2
21MAB102T	Advanced Calculus and Complex Analysis	3	1	0	4
21CYB101J	Chemistry	3	1	2	5
21BTB102T	Introduction to Computational Biology	2	0	0	2
21CSC101T	Object Oriented Design and Programming	2	1	0	3
21MES101L [1]	Basic Civil and Mechanical Workshop	0	0	4	2
21PDM102L [1]	General Aptitude*	0	0	2	0
21GNM101L [1]	Physical and Mental Health using Yoga				
21GNM102L [1]	National Service Scheme	0	0	2	0
21GNM103L [1]	National Cadet Corps				
21GNM104L [1]	National Sports Organization				
	Total Credits				**21**

Semester – III

Course Code	Course Title	L	T	P	C
21MAB201T	Transforms and Boundary Value Problems	3	1	0	4
21DCS201P [1]	Design Thinking and Methodology	1	2	0	3
21CSS201T	Computer Organization and Architecture	3	1	0	4
21CSC201J	Data Structures and Algorithms	3	0	2	4
21CSC202J	Operating Systems	3	0	2	4
21CSC203P [1]	Advanced Programming Practice	3	1	0	4
21LEM201T [1]	Professional Ethics	1	0	0	0
21PDM201L [1]	Verbal Reasoning	0	0	2	0
	Total Credits				**23**

Semester – IV

Course Code	Course Title	L	T	P	C
21MAB204T	Probability and Queueing Theory	3	1	0	4
21CSC204J	Design and Analysis of Algorithms	3	0	2	4
21CSC205P [1]	Database Management Systems	3	1	0	4
21CSC206T	Artificial Intelligence	2	1	0	3
E	Professional Elective-I				3
21PDH209T [1]	Social Engineering	2	0	0	2
21PDM202L [1]	Critical and Creative Thinking Skills	0	0	2	0
21LEM202T [1]	Universal Human Values-II: Understanding Harmony and Ethical Human Conduct	2	1	0	3
	Total Credits				**23**

Semester – V

Course Code	Course Title	L	T	P	C
21MAB302T	Discrete Mathematics	3	1	0	4
21CSC301T	Formal Language and Automata	3	0	0	3
21CSC302J	Computer Networks	3	0	2	4
21CSC305P [1]	Machine Learning	2	1	0	3
E	Professional Elective – II				3
O	Open Elective – I				3
21GNP301L [1]	Community Connect	0	0	2	1
21PDM301L [1]	Analytical and Logical Thinking Skills	0	0	2	0
21LEM301T [1]	Indian Art Form	1	0	0	0
	Total Credits				**21**

Semester – VI

Course Code	Course Title	L	T	P	C
21CSS303T	Data Science	2	0	0	2
21CSC303J	Software Engineering and Project Management	2	0	2	3
21CSC304J	Compiler Design	2	0	2	3
E	Professional Elective – III				3
E	Professional Elective – IV				3
O	Open Elective – II				3
21CSP302L [1]	Project	0	0	6	3
21CSP303T [1]	MOOC	3	0	0	
21PDM302L [1]	Employability Skills and Practices	0	0	2	0
21LEM302T [1]	Indian Traditional Knowledge	1	0	0	0
	Total Credits				**20**

Semester – VII

Course Code	Course Title	L	T	P	C
21GNH401T	Behavioral Psychology	2	1	0	3
E	Professional Elective – V				3
E	Professional Elective – VI				3
21CSC401J	Deep Learning Techniques	3	0	2	4
21CSC402P [1]	Report Writing	2	0	0	2
O	Open Elective –III				3
	Total Credits				**18**

#Students have to register either 21CSP401L or 21CSP402L and 21CSP403L both in eighth semester

Semester - VIII

Course Code	Course Title	L	T	P	C
21CSP401L	Major Project	0	0	30	15
21CSP402L	Major Project	0	0	20	10
21CSP403L	Internship#	0	0	10	5
	Total Credits				**15**

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

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Kattankulathur, Chengalpattu District 603203, Tamil Nadu, India